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A Summary of Current Programs, 10/1/65  
and Preliminary Report of Progress  
for 10/1/64 to 9/30/65

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ECONOMIC AND STATISTICAL ANALYSIS DIVISION DEC 7 - 1965

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ECONOMIC RESEARCH SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE

and related work of the

STATE AGRICULTURAL EXPERIMENT STATIONS

This progress report is primarily a tool for use of scientists and administrators in program coordination, development and evaluation; and for use of advisory committees in program review and development of recommendations for future research programs.

The summaries of progress on USDA and cooperative research include some tentative results that have not been tested sufficiently to justify general release. Such findings, when adequately confirmed, will be released promptly through established channels. Because of this, the report is not intended for publication and should not be referred to in literature citations. Copies are distributed only to members of Department staff, advisory committee members, and others having a special interest in the development of public agricultural research programs.

This report also includes a list of publications reporting results of USDA and cooperative research issued between October 1, 1964, and September 30, 1965. Current economic and statistical research findings are also published in the Outlook and Situation Reports, Agricultural Economics Research, and The Farm Index. This progress report was compiled in the Economic and Statistical Analysis Division, Economic Research Service, U.S. Department of Agriculture, Washington, D.C.

UNITED STATES DEPARTMENT OF AGRICULTURE  
Washington, D.C.  
October 1, 1965



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## INTRODUCTION

The Economic and Statistical Analysis Division has the responsibility for research directed toward (1) the identification and measurement of relationships among the factors affecting the demand, supply, and price of agricultural commodities; (2) identification and measurement of broad relationships between the farm economy and the national economy; (3) measurement and analysis of farm income and income of farm population; (4) measurement and analysis of demand for and consumption of food and other farm products, and long-run projections of economic growth and demand and prices; and (5) historical research relating to major developments in farming and major changes in policies, programs, and organizations of the Department.

Development and improvement of statistical data and development, adaptation, and application of new and improved methods and techniques of statistical analysis are integral parts of this process.

This research provides the information that underlies the appraisals of the current and prospective economic situation for agriculture and for agricultural commodities which are the heart of the outlook work. It also provides the information required for analyses of the probable effects of alternative programs and the measurement of the effects of actual programs.

Economic and statistical analysis research is reported for the period October 1, 1964, through September 30, 1965. The research effort in the Economic and Statistical Analysis Division amounts to approximately 56 professional man-years.

Following are some of the recent research accomplishments of the Economic and Statistical Analysis Division.

A special study was made to determine the position beef inventory numbers currently occupy in the cattle cycle. Based on historical relationships between cattle numbers and past prices, formulas were constructed to forecast the numbers in each of four classes of cattle and calves from the latest price information available. Forecasts can be made from six months to more than a year in advance; for example, forecasts of inventory numbers on January 1, 1967, could be made in late summer of 1965. Individual forecasts can be combined to form a forecast of the total beef cattle inventory. This study indicated that beef cow and calf numbers would drop when feeder calf prices fall and stay below \$21 for a sustained period of time.

Special analyses were completed on the impact of reduced cotton prices following new legislation on mill use of raw cotton, imports and exports of cotton textiles, and the use of cotton and manmade fibers. The improved competitive price position of cotton in the domestic market, resulting from enactment of new legislation in 1964, sharply increased cotton use, and slowed the rate of increase in rayon use. Use of non-cellulosic fibers, however, continued to gain.



Estimates of the income of farm operator families by value of sales classes were developed more accurately to depict changes in the income position of various groups of farms. Distribution of incomes for value of sales classes for the years 1959-1964 were published in the Farm Income Situation, July 1965. The estimates show that in 1964 an estimated 1,010,000 farms with sales of \$10,000 or more accounted for \$31.6 billion in cash income out of a total of \$39.1 billion for all farms combined. This group which comprised 29 percent of all farms accounted for 81 percent of cash receipts and 64 percent of realized net income.

Replies were prepared to several thousand letters to the President and the Secretary concerning the low level of prices received by farmers for meat animals in 1964 and early 1965, the low level of farm income, and proposals for new farm plans and legislation.

Statistical frameworks were developed to explain changes in business conditions, employment, consumer income, and the demand for farm products. In addition, economic projections for the agricultural and non-agricultural sectors were made for 1970 and 1980, including estimates of population and income growth for the total economy and estimates of production, imports, domestic requirements, exports, and prices of major agricultural commodities. The long-term program of measurement and appraisal of supply and consumption of foods was continued. A highlight was the publication of a comprehensive statistical bulletin giving estimates of per capita consumption of individual foods and food aggregates (as index numbers) for the period 1909-63. Supplements will be issued each year to update the information.

During the year, the Agricultural History Branch continued work on a comprehensive history of U.S. technical assistance programs in agriculture and on a history of personnel management in the Department. Significant parts of each study were completed. A comprehensive history of production adjustment, price support, and surplus disposal programs was initiated, with wheat being selected as the first commodity for study.



## AREA NO. 1. COMMODITY SITUATION AND OUTLOOK ANALYSIS

## PROBLEM

Prices to producers are relatively unstable and conditions of agricultural production are changing rapidly. Thus, the farmer stands in special need of frequent accurate appraisals of his economic prospects if he is to plan and carry out his production and marketing activities in an efficient and profitable way. The typical farmer cannot afford to collect and analyze all the statistical and economic information necessary for making sound production and marketing decisions. It has long been a goal of the Department to provide the farmer with economic facts and interpretations comparable to those available to business and industry. Such information is provided through a continuous flow of current outlook information; the development of longer range projections of the economic prospects for the principal agricultural commodities; and analyses of the economic implications of existing and proposed programs affecting major farm commodities. The outlook program was strengthened during the year by extending the quarterly Outlook Digest to a monthly basis, to permit timely reporting of significant changes which may occur between issues of the various commodity Situation reports.

## USDA AND COOPERATIVE PROGRAM

The program includes a continuous appraisal of the current and prospective economic situation of the major crop and livestock items. These appraisals, developments of interest to the industry, and results of special studies are published 4 to 6 times a year in the various commodity Situation reports, with brief resumes in the quarterly Demand and Price Situation and the National Food Situation, and when appropriate in monthly issues of the Farm Index and the Agricultural Outlook Digest. Comprehensive analyses of the current and prospective situation are presented for each of the major commodities at the Annual Outlook Conference, and more limited appraisals given at regional and State conferences and at meetings with industry groups. Special analyses are prepared from time to time on the probable effect of proposed programs on the supply, price, and utilization of the various commodities. Basic statistical series are developed, maintained, improved, and published for general use in statistical and economic analysis. Statistical Handbooks are published periodically for livestock and a number of field crops.

Except for a Regional Field Office for livestock, in Denver, Colorado, all the USDA situation and outlook work is carried on from Washington. The regional livestock project is a cooperative effort including this Division, the Federal Extension Service, and State Extension Services in the Western States.

The total USDA commodity situation and outlook program currently involves 20.5 professional man-years. This total effort is distributed among commodity groups as follows:

<u>Commodity Area</u>	<u>Professional Man-years</u>
a. Livestock and Meat	<u>1/</u> 4.5
b. Fats and Oils	2.0
c. Dairy	2.0
d. Poultry and Eggs	1.0
e. Food Grains	1.5
f. Feed	2.0
g. Fruits and Tree Nuts	1.0
h. Vegetables and Potatoes	2.0
i. Cotton and Man-made Fibers	1.5
j. Wool	1.5
k. Tobacco	1.5

1/ 2.5 man-years in Washington and 2.0 man-years in Denver, Colorado.

#### PROGRAM OF STATE EXPERIMENT STATIONS

For the most part the States depend on the U.S. Department of Agriculture for the yearly across-the-board commodity situation and outlook research. There is increasing interest in longer range price prediction because of the growing specialization of farms, which makes yearly enterprise shifts less common and less feasible, and which calls for large capital commitments over longer periods of time. The State extension staff members supplement and adapt such research information to meet the commodity situation of their States.

The total direct research effort in the situation and outlook area is small--probably no more than 2 to 3 professional man-years. While not designated as outlook research, much of the research conducted by the experiment stations and reported elsewhere contributes to improved understanding of price-making forces, which in turn improves market situation analysis and price forecasting.

## PROGRESS--USDA AND COOPERATIVE PROGRAMS

A. Livestock and Meat

In addition to the regular situation and outlook work, several special analyses were made during the past year. Additional consideration was given to the character of the present cattle cycle and how it has differed from earlier cycles. This work has centered on the nature of changes in the makeup of the cattle inventory and the relationship between cow slaughter and the beginning year cow inventory. Attention was also given to the relationship between number of cattle marketed from feedlots and the number on feed at the beginning of the quarter, by weight groups and by regions.

With higher cattle prices and lower average marketing weights that developed during the year, a study was made on price premiums for cattle of different weights in various market situations.

Attention has been focused on cattle productivity and some progress has been made in looking into this subject. Special work was done on feeding margins and their influence on returns on cattle feeding operations. A steer-composite feed price ratio was developed as a substitute for the steer-corn price ratio that has been used in evaluating probable effects on fed cattle output of changes in steer and feed prices. With hog prices up substantially this year, and the resulting quite favorable hog-corn price ratio an analysis was made of the possible increase in farrowings next year and the probable effect on farm price.

B. Fats and Oils

Increased attention was given to soybeans during the year under review. Soybeans now rank third among cash crops in the United States behind corn and cotton. Also, record dollar exports of soybeans and soybean oil and meal in fiscal 1965 carried the oilseed and product commodity group to its fourth consecutive year as top dollar earner among U.S. agricultural exports.

Coverage of the fats and oils situation was broadened by an article, published in the November 1964 Fats and Oils Situation, on the soybean processing industry. This article provided data on the number of mills operating and estimated processing capacity, total and that utilized, 1951-64. It revealed that processing capacity exceeds actual crushings by about 20 percent despite the sharp upward trend in soybean production and the steady reduction in number of mills. Trends toward larger but fewer mills, the integration of soybean crushings with feed-mixing and other sideline activities, and excess processing capacity all will tend to keep continued pressure on processing margins.

An article in March 1965 analyzed the trends in U.S. soybean acreage and production, by regions, 1947-65. During the post-war period, over 20 million acres had been shifted from other crops (mainly oats, corn, and cotton) to



soybeans. The most challenging problem facing researchers and the industry was how to raise soybean yields per acre from the plateau on which they had remained for the past 8 years.

A special article in August 1965 explained the implications of shifting the U.S. soybean marketing year to a September 1-August 31 basis. The marketing year formerly started October 1. The primary reason for the shift has been the trend toward earlier soybean harvest with an increasing amount of the crop harvested in September. The article marked the official USDA shift in the soybean marketing year.

An article on postwar trends in U.S. peanut acreage, production, and usage in May 1965 was the most comprehensive of its kind in over a decade and incorporated new statistical series published for the first time. The analyses included changes in the peanut price support program, shifts in the production and yields in the 3 major peanut-producing areas, shelling out-turns, quality factors by type of peanut, and trends in peanut consumption.

#### C. Dairy

Considerable effort has been devoted to analyzing the effects of existing and proposed Government programs as they affect milk production, marketings, consumption, stocks, and income. Other work in this area includes analyses of changes in imports and exports of dairy products, fluid milk pricing plans, and dairy farm income by value of sales classes.

An analysis of the role government plays in pricing fluid milk was made, showing the operations and methods used in Federal milk marketing orders, State milk control programs and State programs for regulating sales below costs. In all, milk sold under State and Federal marketing orders represents 90 percent of all milk that meets sanitary standards for fluid use. The report found that in addition to 76 Federal milk orders covering urban areas in all parts of 37 States, milk control agencies in 20 States fix prices. Seventeen of these latter States regulate various trade practices. Nine additional States have laws specifically regulating the sales of dairy products below cost or other trade practices.

Supplement for 1963-64 to Dairy Statistics, Statistical Bulletin No. 303, was issued in July 1965.

A simplified flow chart of milk production and utilization for 1964 was published in the September 1965 Dairy Situation with comments, updating material published in 1957 in USDA Technical Bulletin 1168.

#### D. Poultry and Eggs

Several topics received special attention during the past year. The May issue of the Poultry and Egg Situation featured an analysis of changes in the hatchery industry. Hatcheries in recent years have become larger,

fewer in number, and more closely integrated with other segments of the poultry industry. These changes, together with reduced seasonality of production in the case of chicks, have contributed to a substantial reduction in excess capacity. It was estimated that chick hatcheries in 1964 utilized about 60 percent of their egg setting capacity compared with only 40 percent in 1957. Turkey hatcheries in 1964 utilized only about a third of their capacity--due partly to the highly seasonal nature of poult hatchings. The July Situation focused attention on the large cyclical buildup that was getting underway in broiler production and compared the factors operating in the current expansion with those in past expansions. Producers were warned that if this buildup continued they would probably experience a long period of depressed prices more severe than in 1963-64. The September issue included a discussion of the factors in the declining demand for eggs in recent years and concluded that the downtrend may be continuing. A statistical supplement to the Poultry and Egg Situation was issued for the first time in May 1965.

#### E. Food Grains

1. Wheat. During the past year special attention was again devoted to analysis of proposed wheat programs. Program analysis was directed at the alternatives resulting from the substitution of wheat and feed grain acreages and the effect on production and supplies. Under the existing wheat program more wheat has been fed. Coverage of the Wheat Situation was expanded to devote more attention to the competitive position of wheat and feed grains. Another new feature was the development of statistical data on wheat and flour price relationships and the factors affecting them. These materials are updated and discussed periodically. A special analysis was prepared on trends in wheat production and results were published in July 1965. There were some significant changes in production of the various classes. Production of both hard winter wheat and white wheat increased substantially and account for larger proportions of the crop in recent years than in the past. Production of the other classes, hard spring, soft red winter and durum, has generally diminished, although production of the last two continues to fluctuate sharply from year to year.

2. Rice. Statistics covering supply and disappearance of milled rice were expanded and historical data were revised to account for the increasing trend to brown and parboil rice. Special attention is also being given to competition of foreign rice in export markets.

#### F. Feed

During 1964-65, the Feed Grain Program continued to be given special attention. The program was a dominant factor in the smaller feed grain acreage in 1961-65, about 20 percent below the 1959-60 base, a reduction in carry-over stocks from 85 million tons in 1961 to 54 million this year, and an increase of 16 percent in feed grain prices since 1960-61. The marked upward trend in yield per acre, averaging about 6 percent annually since 1954,

brought each of the 4 feed grain yields to new record highs in 1965 and resulted in another big crop in spite of the lowest acreage in more than 70 years. Special analyses were made, in cooperation with other agencies of the Department, of alternative types of feed grain programs under consideration for 1966 and later years.

A special study was made of the relationship between livestock and feed prices, feeding rates per animal unit and total feed grain consumption during the past 10 years. Results of the study were discussed and shown graphically in the November 1964 issue of the Feed Situation.

An analysis of the seasonal variation in the production of commercially prepared livestock and poultry feeds, based on data furnished by the American Feed Manufacturers Association, was published in the February 1965 issue of the Situation. High-protein feed supplies, consumption per animal unit, and prices continued to be given special attention, as were changes in the relationship between prices of urea-grain mixtures and oilseed meals.

#### G. Fruits and Tree Nuts

A special section on noncitrus fruits in the June 1964 Fruit Situation was followed by a similar article on citrus fruits in October. These presentations summarize the market position for processed fruits and give background information on production and utilization of fruit crops.

The geographic importance of U.S. fruit and nut production was examined and appraised on the basis of both quantity produced and value of production, basis the 48 Mainland States. Results were summarized in the special article in January 1965.

Fruit tree censuses made in 10 apple States since 1960 were analyzed and results published in another article in January 1965. The census data revealed a high proportion of young trees, recent heavy plantings of dwarf-type trees, and the increasing importance of Red Delicious and Golden Delicious varieties of apples.

Plum and prune industry trends over the past 30 years and prospects for the future were summarized in a special article in June 1965. Changes in plum and prune production, varieties, uses, and consumption were discussed.

"Trees, Apples and Population in 1970" was the subject of a leading paper presented at the 30th Annual Meeting of the National Apple Institute, Sun Valley, Idaho, June 24-27, 1965. This paper, prepared at the request of the National Apple Institute, pointed to the increasing emphasis in new plantings of dwarf-type trees and highly colored varieties, to a westward shift in production, and to prospective increases in apple production at a faster rate than population growth.



Tables on supplies and distribution of fresh fruits were revised to embody new data on banana imports. This change recognizes the recent transition from stems to boxes in shipping this fruit.

#### H. Vegetables and Potatoes

Because of continued widespread interest in the changing pattern of potato utilization, attention was given to developing and refining statistical series on consumption. The studies indicated sharp gains over the past 15 years in processed potato use, particularly of potato chips and frozen potato products. The heavier use of processed potatoes occurred at the expense of sales to fresh market outlets; consumption of fresh potatoes per person declined nearly a fifth during the last decade, falling to an alltime low in 1964. Other work on potatoes included development of a stocks-disappearance ratio for frozen potatoes which provides a means of evaluating market conditions in the processing industry and the potential effect on the overall potato price structure.

Analyses were prepared for the Secretary's office on the probable effect of proposed Government programs on acreage, production, utilization, price, and farm income of dry edible beans and dry peas.

In cooperation with specialists in other agencies of the Department, a special report was prepared for the Committee for Agriculture of the Organization for Economic Cooperation and Development concerning the fruit and vegetable industry in the United States. The report analyzed major aspects of the domestic industry including trends in acreage, production, utilization, and consumption; foreign trade; changes in the production and marketing structure; and government services and activities affecting the U.S. horticultural industry.

#### I. Cotton

Enactment of cotton legislation in early April 1964 improved the competitive price position of American upland cotton in the domestic market by reducing the net cost of raw cotton to users. As a result, the rate of cotton consumption increased sharply during the 1964-65 crop year. However, the increase in consumption was more than offset by a sharp decline in exports. At the same time, the 1964 crop was large because of record-high yields and carryover rose nearly 2 million bales during 1964-65. Prospects are for some further increase in carryover during the current marketing year.

Because of this continued buildup in the cotton carryover, a number of special analyses were prepared for the Secretary's office on the probable effect of alternative programs on price, supply, and consumption of cotton. Also, special analyses were made of factors affecting U.S. exports of cotton. Data and analyses were provided to the Secretary of Agriculture's Advisory Committee on Cotton. An annual supplement to a basic statistical handbook, including data for 1964-65, was published. Data were updated for publication



of a statistical handbook for extra-long staple cotton. Conversion factors were derived to be used in estimates of the raw fiber content of cotton, wool, and man-made fiber fabrics used by the military.

Special analyses were completed on the impact of reduced cotton prices following new legislation on mill use of raw cotton and on imports and exports of cotton textiles. These included analyses of effects of price and other factors on the use of cotton and man-made fibers. On a relative price basis, cotton competes most directly with rayon staple fiber. The non-cellulosic fibers compete on the basis of qualitative factors, promotion and advertising, and to a lesser extent on the basis of price. The improved competitive price position of cotton in the domestic market, resulting from enactment of new legislation in 1964, slowed the rate of increase in use of rayon. Use of non-cellulosic fibers, however, continued to increase.

#### J. Wool

A number of special studies were made during the year. Special analyses related to foreign trade in raw wool and wool textile products and their impact on the U.S. wool industry. Studies also were made for the Secretary's office on the impact of various proposed changes in the wool program on production of wool, incentive payments, and prices received by growers. Quarterly estimates relating to wool were provided to the Commonwealth Economic Committee.

The data include estimated mill use of raw wool and all other fibers in the woolen and worsted industry, production of wool tops, yarn, and fabric and stocks of raw wool and tops. In addition, forecasts are made for mill use of apparel and carpet wool for the next quarter.

#### K. Tobacco

Special attention was devoted to a number of problem areas. Intensive analyses of yield data and the economic effects of proposed program changes were made in connection with acreage-poundage legislation. Sample county data were analyzed and results projected to State and national totals to provide the necessary guidance for Department administrators and Congressional groups in framing legislation. The tobacco consumption pattern was and is being closely followed in light of the smoking-health issue. Cigarette consumption has regained much of the ground lost after publication of the Surgeon General's report on smoking and health in January 1964, but continuing appraisal of the consumption pattern is necessary in view of the cigarette labeling regulation and the increasing educational-informational programs being launched. Proposed legislation bearing on cigarette smoking and health was analyzed. A study also was made of alternative programs to make U.S. tobacco exports more competitive.

## AREA NO. 1. COMMODITY SITUATION AND OUTLOOK ANALYSIS

## PUBLICATIONS -- USDA AND COOPERATIVE PROGRAMS

Livestock and Meat

Rizek, R.L. Livestock and Meat Situation. Published 6 times a year. ERS, USDA, Washington, D.C.

Reierson, Robert. Western Livestock Round-up. Published 12 times a year by Cooperative Extension Services of various Western States. ERS, FES, and State Extension Services cooperating.

Green, Charles H., Turner, Michael, and Olson, Fred. December 1964. Futures Trading in Beef Cattle. Western Livestock Round-up, pp. 2-8. (Reprinted in January 1965 Livestock and Meat Situation, pp. 32-39.)

Livestock and Meat Statistics. August 1965. Supplement for 1964 to Statistical Bulletin No. 333, 162 pp.

Fats and Oils

Kromer, George W. Fats and Oils Situation. Published 5 times a year. ERS, USDA, Washington, D.C.

Kromer, George W. November 1964. U.S. Soybean Processing Capacity Continues to Expand. Fats and Oils Situation, pp. 48-50.

Kromer, George W. January 1965. Recent Trends in U.S. Production and Consumption of Edible Meat Fats. Fats and Oils Situation, pp. 29-35.

Doty, Harry S. March 1965. Cooked Soybeans for Feed. Fats and Oils Situation, pp. 36-42.

Kromer, George W. March 1965. Trends in U.S. Soybean Acreage and Production, 1947-65. Fats and Oils Situation, pp. 27-35.

Kromer, George W. May 1965. Trends in U.S. Peanut Acreage, Production and Usage, 1947-65. Fats and Oils Situation, pp. 21-37.

Campbell, Proctor. August 1965. U.S. Soybean Oil Export Markets. Fats and Oils Situation, pp. 37-40.

Dairy

Mathis, A.G. Dairy Situation. Published 5 times a year. ERS, USDA, Washington, D.C.

Mathis, A.G. October 1964. What Became of the World Dairy Surplus? Foreign Agriculture, Including Foreign Crops and Markets, pp. 5-6.

Mathis, A. G.; McIntire, G. B.; and Toomey, J. May 1965. Government's role in pricing fluid milk in the United States. Dairy Situation, pp. 36-75. (Reprinted: ERS-239)

McCabe, Terrance W. and Miller, Robert H. March 1965. World casein trade continues to expand. Dairy Situation, pp. 34-39.

Miller, Robert H. September 1965. Dairy farm income by value of sales class. Dairy Situation, pp. 30-34.

Dairy Statistics. June 1965. Supplement for 1963-64. Statistical Bulletin No. 303, 185 pp.

### Poultry and Eggs

Bluestone, H. Poultry and Egg Situation. Published 5 times a year. ERS, USDA, Washington, D. C.

Bluestone, H. November 1964. Turkey production change. Agricultural Situation, pp. 10-11.

Bluestone, H. January 1965. Uptrend in broilers loses momentum. Agricultural Situation, pp. 4-5.

Bluestone, H. May 1965. Downtrend in hatchery capacity and numbers continues Poultry and Egg Situation, pp. 16-18.

Selected Statistical Series for Poultry and Eggs Through 1964. May 1965. ERS-232, 48 pp.

### Food Grains

Askew, W. R. Wheat Situation. Published 4 times a year. ERS, USDA, Washington, D. C.

Askew, W. R. Rice Situation. Published annually. ERS, USDA, Washington, D.C.

Gomme, F. R. July 1965. Trends in U.S. wheat production by classes. Wheat Situation, pp. 16-17.

### Feed

Clough, Malcolm Feed Situation. Published 5 times a year. ERS, USDA, Washington, D. C.

Clough, Malcolm November 1964. Recent trends in feed consumption and livestock-feed relationships. Feed Situation, pp. 40-44.

Clough, Malcolm February 1965. Seasonal variations in the production of commercially prepared formula feed. Feed Situation, pp. 30-34.

Grain and Feed Statistics. March 1965. Supplement for 1964 to Statistical Bulletin No. 159, 65 pp.

### Fruits and Tree Nuts

Pubols, B. H. Fruit Situation. Published quarterly. ERS, USDA, Washington, D. C.

Pubols, B. H. October 1964. Processed citrus fruit. Fruit Situation, pp. 24-36.

Park, E. L. January 1965. Recent trends in apple tree numbers. Fruit Situation, pp. 17-19.

Pubols, B. H. January 1965. Geographic distribution of fruit and nut reproduction. Fruit Situation, pp. 19-26.

Pubols, B. H. June 1965. Trends in the plum and prune industry. Fruit Situation, pp. 20-31.

Pubols, B. H. August 1965. Apple trends and population growth. Agricultural Situation, pp. 1-3.

### Vegetables and Potatoes

Kuryloski, D. S. Vegetable Situation. Published quarterly. ERS, USDA, Washington, D. C.

Kuryloski, D. S. January 1965. Fruit and vegetable production and marketing in the United States. ERS, USDA, Washington, D. C. 44 pp. (processed)

### Cotton

Donald, James R. Cotton Situation. Published 6 times a year. ERS, USDA, Washington, D. C.

Hall, R. March 1965. The changing market for cotton. Cotton Situation, pp. 11-14.

Statistics on Cotton and Related Data. October 1964. Supplement for 1964, Statistical Bulletin No. 329.

### Wool

Raymond, Charles E. Wool Situation. Published quarterly. ERS, USDA, Washington, D. C.

Raymond, Charles E. October 1964. World prospects for expanding sheep production. Wool Situation, pp. 15-18.



Tobacco

Conover, A. G. and Sackrin, S. M. Tobacco Situation. Published quarterly.  
ERS, USDA, Washington, D. C.

Conover, A. G. November 1964. The Tobacco Situation--Record 1964-65  
Supplies. Agricultural Situation, pp. 1-2.

Conover, A. G. February 1965. The Tobacco Situation--1964 Breaks Long  
Uptrend. Agricultural Situation, pp. 6-7.

Sackrin, S. M. May 1965. Tobacco acreage smallest in many years.  
Agricultural Situation, pp. 10-11.

Conover, A. G. June 1965. New tobacco program approved by referendum.  
Agricultural Situation, pp. 13.

## AREA NO. 2. SUPPLY, DEMAND AND PRICE OF AGRICULTURAL COMMODITIES

### PROBLEM

Producers, processors, distributors and consumers need more accurate quantitative knowledge of the interrelationships among prices, production, and consumption of farm products. Farmers and farm-related businesses need to know the prices they may expect from different levels of production to plan for maximum returns. Cooperatives, processors, and distributors need adequate statistical information on price and consumption responses under different supply conditions to aid in distribution of agricultural supplies that lead to maximum returns to farmers. Similarly, Congress and the administrators of farm programs need to evaluate alternative proposals to modify existing price support, production, marketing and other programs in terms of their impact on production, consumption and prices at both the farm and retail levels. The development of new statistical methods and the application of existing methods for measuring the interrelationships among prices, production, and consumption of farm products serve these needs by strengthening outlook and situation work, providing the basis for special analyses of alternative agricultural policies, and assisting research workers in agricultural economics.

### USDA AND COOPERATIVE PROGRAM

The program of basic research into the factors affecting prices, supply, and consumption of principal agricultural commodities is concerned with four broad areas: (1) Measurement of consumer response to price, income, and other factors; (2) measurement of producer response to price and other factors; (3) measurement of the effect of supply and demand factors on prices to farmers and to consumers; and (4) improvement of statistical techniques for measuring agricultural economic relationships and for the development of statistical formulas which can be used in making price, supply, and consumption forecasts and in appraising economic implications of alternative programs.

Changes in emphasis are made from time to time to utilize effectively the professional skills available and to adjust to work having the highest priority. The research is commodity oriented, but in some areas such as livestock, livestock products, and feed, the research is part of an integrated analysis of the feed-livestock economy. The study of the beef cattle sector includes analyses of inventory numbers, of fed cattle marketings, of production and the composition of beef supply, and the impact of the growing importance of feedlots and emerging demand patterns for beef on the changing nature of the cattle cycle. Work in the livestock area also includes studies of the demand and price factors for eggs, broilers, and turkeys. Research on feed grains includes measurement of

the influence of factors affecting supply and utilization among the different kinds of livestock with emphasis on substitution possibilities among these feed grains, and the extent to which they compete for the same farm resources. The current emphasis on cotton is to measure the economic factors that affect the price, supply, and utilization of cotton and cotton products, while that on tobacco is related to economic effects of technological changes including information relating to health on supply, demand, utilization, and price of leaf tobacco.

A facet that is becoming increasingly important in carrying out the statistical and econometric work of the Division is the use of electronic computers. The program includes continual evaluation of latest developments in the field, equipment and computer programs available for use, and the application of this to our data submitted for machine processing.

The USDA program of research in this area involves 9 professional man-years and is located in Washington, D.C. The total effort is distributed by research areas as follows:

<u>Research Area</u>	<u>Professional Man-Years</u>
(a) Livestock and meats	2.0
(b) Feed grains and byproduct feeds	0.5
(c) Poultry and eggs	0.5
(d) Food grains	0.5
(e) Potatoes	1.0
(f) Cotton and other fibers	1.5
(g) Tobacco	0.5
(h) Improvement of statistical techniques	2.5
Total professional man-years . . . . .	9.0

#### PROGRAM OF STATE EXPERIMENT STATIONS

Many of the States carry on supply, demand, and price analyses for the products of their State. Much of the research is commodity oriented, though some projects are of a highly mathematical and theoretical nature aimed at improving price analysis methodology.

The research on demand for a large number of commodities will indicate the price elasticity, the income elasticity, and the cross elasticities of the commodities being studied. Because researchers are finding that some changes cannot be explained by price, income, and supply of competing commodities there is increasing research interest in social and psychological factors affecting demand.

The supply response to price changes is a matter that is receiving considerable attention. This is in part because of its significance to farm incomes and government programs. Significant progress is being made in



understanding the relationship of the capital structure on farms to supply response and thus to the difference between long-run and short-run supply responses.

A more detailed statement of the State Agricultural Experiment Station program of research dealing with supply, demand, and price of agricultural commodities is included in the Marketing Economics Multiple-Use Report under Area 1, Section B, entitled "Organization and Performance of Markets--Prices, Margins and Costs." The total State Station effort devoted to research under that title amounts to 116.1 professional man-years.

## PROGRESS -- USDA AND COOPERATIVE PROGRAMS

### A. Livestock and Meat

Congress passed meat import quota legislation (Public Law 88-482) in August 1964 that required the Secretary of Agriculture to make estimates of domestic production of beef, veal, mutton, and goat meat for the coming calendar year each preceding December as part of the procedure for determining whether an import quota should be imposed during that year. Special analyses of factors affecting the production of these meats were made in late 1964 to provide a statistical basis for forecasting the production of beef, veal, mutton and goat meat for calendar year 1965. Further work is being done in 1965 to refine the models used in these analyses for the projections that will be made for 1966.

A beef cattle inventory study was completed and published. Based on historical relationships between cattle numbers and past prices, formulas were constructed in this study which could be used to forecast the numbers in each of four classes of cattle and calves from the latest price information available. These forecasts can be made from six months to more than a year in advance. For example, inventory numbers on January 1, 1967, could be forecast from information available in late summer of 1965. The individual forecasts of each class of cattle can be combined to form a forecast of the total beef cattle inventory. This study indicated that beef cow and calf numbers would drop when feeder calf prices fall and stay below \$21.00 for a sustained period of time.

A supply response model was developed which considers fed beef and non-fed beef slaughter as two separate components of beef supply. New long-time series for fed and non-fed beef had to be developed for use as data in this model. Preliminary results from this model for fed and non-fed beef indicate that the price margin between steer and feeder calves, the steer-corn price ratio, and the number of cattle available for feeding were important factors in determining the number of fed beef animals slaughtered. Parts of this study along with the new data developed will be published shortly.

Some progress has been made toward testing different series which could be a better measure of feed costs for cattle in place of the currently used steer-corn price ratio. A description of how total returns to fed cattle can be broken down into returns to feeding and returns to margins has been completed.

Some progress has also been made in the study begun in 1964 to improve quarterly forecasts of marketings and prices of fed cattle, prices of feeder animals, and the number of animals placed on feed. However, more work is needed in this area to develop statistically acceptable formulas for adequate forecasting in situation and outlook work, particularly the formula for the number of animals placed on feed.

As part of a continuing program of evaluating previously developed statistical models, the quarterly supply model developed in 1962 for determining the number of hogs farrowed and slaughtered and the price of hogs was tested for its ability to make current forecasts and to determine ways to adapt the model to recent changes in cyclical and seasonal patterns of hog production and prices.

#### B. Feed Grains and Byproduct Feeds

Analyses were made of the seasonal variations of price of 4 feed grains and 17 byproduct feeds and the results were published in the June and August issues of the Feed Situation.

With the growing importance of soybeans in the feed and fats and oils economy, some work was initiated on the demand for soybean meal and soybean oil. Several demand functions for soybean meal and soybean oil have been statistically tested. Preliminary results from this analysis indicate that, on the average, a 10-percent increase in the price of soybean meal will result in a decrease in consumption of soybean meal by about 6 percent. On the other hand, a 10-percent decrease in the price of cottonseed meal, its nearest competitor, will only decrease consumption of soybean meal by about 3 percent or only about half of the effect of a like increase in soybean meal prices. These are the effects of prices after the quantity of feed grains utilized has been taken into account.

#### C. Poultry and Eggs

Research was initiated to identify and statistically measure the impact of factors influencing the supply, demand, and price of eggs. Analyses are being developed for the United States as a whole and for individual regions. Preliminary findings to date indicate that changes in egg supplies and a downtrend in egg demand explain most of the variation in egg prices over the last decade. Analyses also show that egg prices in recent years have declined most in States and regions moving from a deficit to a surplus position in egg production.

Turkey demand and factors influencing turkey prices, in and outside the heavy fall marketing period, were analyzed for the first time, using new data which have become available only recently. Major findings of the study include: (1) The quantities of turkey consumed is much more responsive to changes in the turkey price in the January-August period than in September-December period; (2) farm turkey prices in January-August are affected by the current level of chicken supplies but prices in September-December are not; and (3) farm turkey prices in September-December are influenced by the year-to-year change in poultry consumption in the preceding 8 months. The price predicting equations developed gave estimates of the farm turkey price in September-December and for the year as a whole that were within 1 cent or less of the observed price for each of the 10 years in the study. Estimated prices for the January-August period were within 1 cent of observed prices in 7 out of the 10 years, the greatest deviation being 1.7 cents. Results of this study are expected to be ready for publication in the next few months.

#### D. Food Grains

A special study was made of the cash market for soft red winter wheat at Chicago at the request of the Commodity Exchange Authority. This study identified and measured the influence of basic supply and demand factors affecting the season average price and the May average price for soft red winter wheat. The results of this study will be useful in an analysis of the supply and demand factors for the other classes of wheat.

A study was made for the Secretary's Office of the demand for rice and the effect of different levels of prices on consumption of rice. This study concluded that consumption was not very responsive to price changes--i.e., an increase of 10 percent in the price of rice could result in a decrease of about 2 to 3 percent in rice consumption. The study also found that per capita demand for rice had increased in recent years. However, because of lack of data, it was not possible to determine the extent new products such as instant rice and new consumer attitudes concerning the place of rice in our diet contributed to this rise in consumption.

#### E. Potatoes

A draft of a technical bulletin on demand and price analysis for potatoes has been prepared and is being reviewed for publication. This divides the annual potato market into four seasonal markets and measures the degree of competition between the different early seasonal potato crops and storage type potato from the fall crop in each of these seasonal markets. The study shows that different seasonal types of potatoes can be differentiated even though they are closely competing products.

The bulletin also presents a utilization model for the late fall potato crop which shows that consumption response differs among outlets. For



example, potatoes used for food reflect a much more inelastic demand than potatoes used for livestock feed or for starch. Statistical results from the utilization model can be useful in predicting the allocation of potato supplies into food and non-food uses.

#### F. Cotton and Other Fibers

Research during the past year has been concentrated on the price and utilization of cotton and cotton textiles, with separate statistical analyses to isolate the important factors in both domestic and foreign outlets. A manuscript presenting results of the analysis of foreign outlets for U.S. cotton is nearing completion. Results of analyses indicates that the level of U.S. cotton prices in foreign markets has affected acreage devoted to cotton in foreign countries. This in turn has affected the level of foreign cotton production which competes with U.S. cotton in world markets. Following the end of World War II and into the mid-1950's, both acreage and production in foreign countries tended upward in response to relatively high prices for cotton. Lower prices in world markets since the mid-1950's have slowed the acreage expansion. However, production continued to increase because of rising yields per acre.

U.S. exports of cotton are also related to the level of cotton consumption in foreign countries. Analyses indicate that cotton consumption abroad is affected by the level of world cotton prices, prices for and consumption of synthetic fibers, population, and changes in the level of economic activity. Year-to-year change in cotton stocks in foreign countries is also reflected in the volume of U.S. cotton exported. Equations have been developed for forecasting foreign acreage, production and consumption of cotton.

Exploratory analyses have been made of the role of price and other factors in consumption of cotton for apparel, household, and industrial uses to gain insight into the domestic utilization of cotton. Analyses are also underway to determine the role of price and other factors in the use of fibers in fabrics for the military. The emphasis is on competition between cotton and synthetic fibers for these uses.

An article was published which analyzed the effect of prices and other factors on the use of cotton and synthetic staple fibers. On a relative price basis, cotton competes most directly with rayon staple fiber. With more competitive prices for cotton during the past year, the rate of cotton use increased sharply, while the rate of increase in rayon staple fiber was slowed.

#### G. Tobacco

Analysis was made of price relationships and relationships of stocks among the various types of flue-cured tobacco. Continuing analysis was made of

trends in utilization of tobacco as affected by recent technological changes, and their impact on growers. In 1964, use of tobacco in cigarettes is estimated to have declined about 3 percent, whereas cigarette output declined about 2 percent. The impact and implications of the smoking-health issue during the past decade and in the recent period were studied and the 1964 declines in cigarette consumption by States were measured on a per capita (18 years and over) basis. Further discussions were held with Public Health Service personnel regarding that agency's forthcoming survey data on tobacco use and consumer attitudes, and some preliminary results obtained. Additional analysis was made of alternative methods of supply adjustment.

#### H. Improvement of Statistical Techniques

One of the difficulties in isolating and measuring the effect of special factors, such as government purchase programs, on prices and demand for agricultural commodities is that frequently the historical experience is confined to a very limited number of observations. In addition, changes occur in legislation which limit the length of period of "no underlying changes in structure"--a requirement for statistical analysis. To cope with these problems, special tests were made of different ways that these influences could be measured when the historical period of observation was limited. This was done using data for several commodities. For example, several different methods were tested in a study measuring the effect of the government egg purchase program on the demand and price for eggs and in the study involving the cash market for wheat.

Another research area initiated during the past year concerns problems associated with seasonal variation in the data. For some commodities, reliable monthly and quarterly forecasts can be made only if seasonal shifts in production and demand are identified. This study included an evaluation of methods of seasonally adjusting data, an evaluation of special problems peculiar to a commodity, and an analysis to determine whether it is more feasible to use seasonally adjusted data in statistical analyses or to use unadjusted data and provide for the seasonal influences directly in the statistical analysis.

During the current reporting period, further progress was made in developing special purpose computer programs that will assist personnel from four Branches of the Division in meeting their work objectives.

A computer program was rewritten for the Cotton and Other Fibers Section of the Commodity Analysis Branch. It converts Census export statistics for varied textile products to a common reporting unit--pounds of raw fiber equivalent. These data are summarized by designated classes and groups for cotton, wool and the manmade fibers. Changes in this program were required because of a revision in the Census export codes in January 1965.

A complete supply-demand model used in a program developed in the Outlook and Projections Branch was further modified and tested. Essentially, a recursive type model, the program projects values for certain price, production and quantity series for the feed-livestock area. It has proven a valuable guide in assessing varied alternatives used in developing long-run projections.

A general matrix program written for the IBM 7094 was acquired from Harvard University. It allows for adjustments of input data and subsequent matrix operations. The program was modified to allow for the inversion of matrices to the order of 97--the dimension of a transactions accounts matrix developed in the Farm Income Branch. These data were generated to provide a means for measuring and analyzing relationships between agriculture and other segments of the economy.

Further analysis was made on computerizing the cash receipts sector for the Farm Income Branch. Contracted work at the Washington Data Processing Center was suspended pending a decision on the type of computer the Department would acquire. In the interim, however, the addition of an experienced systems analyst to the Division staff permitted the extensive systems review to continue.

Programs that produced special tabulations were developed for the Farm Population Branch. Tables from one project presented characteristics of households and individuals within households based on a sample of the 1960 U.S. censuses of population and housing. Tabular data from the second project were based on a 1963 survey of the kinds and value of perquisites farm workers received in addition to their cash wages.

## AREA NO. 2. SUPPLY, DEMAND AND PRICE OF AGRICULTURAL COMMODITIES

## PUBLICATIONS -- USDA AND COOPERATIVE PROGRAMS

Livestock and Meat

Walters, Forrest E. and Nielsen, Howard. November 1964. The Beef Cattle Inventory and Cattle Prices. Livestock and Meat Situation, pp. 29-34.

Walters, Forrest E. January 1965. Predicting the Beef Cattle Inventory. Agricultural Economics Research, Vol. XVII, No. 1, pp. 10-18.

Feed Grains and Byproduct Feeds

Ross, J.S. June 1965. Seasonal Variation in Feed Grain Prices. Feed Situation, pp. 28-33.

Ross, J.S. August 1965. Seasonal Variation in Prices of Byproduct Feeds. Feed Situation, pp. 29-35.

Cotton

Wittmann, Charles H. and Donald, James R. November 1964. Seasonal Adjustments, Cyclical Movements, and Trends in Consumption of Cotton and Man-made Staple Fibers. Cotton Situation, pp. 14-24.

Tobacco

Conover, A.G. July 1965. The Domestic Consumption of Tobacco Products and the Smoking-Health Issue. Paper presented at the Twentieth Tobacco Workers Conference. University of Kentucky, Lexington, Kentucky. 17 pp.



## AREA NO. 3. FARM INCOME

## PROBLEM

Timely and accurate statistical information and analyses on the farm income situation and outlook are essential to farmers, legislators, administrators, and others in developing production and marketing plans and in evaluating the needs for and operations of public programs for agriculture. Changes in the structure of commercial agriculture require the development of new methods and sources of data to maintain and improve the representativeness of farm income measures. Quantitative measures of the interrelationships between agriculture and other sectors of the economy are needed for assessing the impact of changes in the farm sector on related nonfarm sectors and the impact of changes in non-farm sectors on farming. Centralization and maintenance of a large number of economic time series pertaining to agriculture is required to permit prompt and accurate handling of a continuous flow of a wide diversity of requests for economic data on agriculture.

## USDA AND COOPERATIVE PROGRAM

The Department has a continuing long-term program of economic and statistical research which includes the development of new methods and sources of data and the regular preparation of current estimates and projections. This work is located in Washington, D. C. The Federal program of research in this area involves 12 professional man-years. This is divided as follows: (a) Current estimates of farm income and expenditures, 5 man years; (b) Research and Methods relating to farm income, 4 man years; (c) Analysis of the impact of alternative farm programs on agriculture and the rest of the economy, 1 man year; (d) Centralization and maintenance of economic data pertaining to agriculture, 2 man years.

## PROGRAM OF STATE EXPERIMENT STATIONS

The States rely considerably upon the USDA for research into the farm income situation. Some States conduct supplementary research, especially into certain aspects of farm expenses. Farm account records also play an important role in providing considerable detail as to what is happening to farm income in certain types of farming areas and even generally.

## PROGRESS - USDA AND COOPERATIVE PROGRAMS

A. Current estimates of farm income and expenditures.

Farmer's realized net income in the first half of 1965 was estimated at a seasonally adjusted annual rate of \$13.8 billion--a billion dollars above the rate in the first half of 1964. Production, marketing, and price prospects

for the remainder of 1965 point to a realized net farm income in 1965 which may be the highest since 1953, and some \$600 million more than the \$12.9 billion realized in 1964.

This work project also produced estimates which showed that realized gross farm income in 1964 was \$42.2 billion, a record high, and some \$4.3 billion higher than in 1960. Cash receipts from farm marketings which make up almost 90 percent of realized gross farm income were estimated at \$36.9 billion in 1964, down slightly from the record high of 1963, but \$3.0 billion higher than in 1960. Direct Government payments to farmers rose about \$500 million in 1964 to a record high of \$2.2 billion, compared with about \$700 million in 1960.

Farm production expenses have also risen since 1960, although a small decline occurred in 1964. The estimated total of \$29.3 billion expended in 1964 was some \$3 billion more than in 1960. With realized gross farm income rising faster than production expenses since 1960, realized net farm income in 1964 was estimated at \$12.9 billion compared with \$11.7 billion in 1960.

Farm operators realized net income per farm reached a record high of \$3,727 in 1964, up about \$800 or 13 percent per farm compared with 1960. The rise in aggregate realized net farm income and the continuing decline in farm numbers accounted for the per farm increase over the four year period. State estimates for 1964 indicated that realized net farm income per farm rose in all regions of the country except the South Central States where it was relatively unchanged. Thirty-seven States showed an increase from 1963 to 1964 in their per farm average, while thirteen States were lower.

The per capita personal income of the farm population from all sources totaled \$1,381 in 1964; \$859 on the average came from farm sources and \$522 from nonfarm sources. The total was down slightly from 1963, but well above the \$1,194 of 1960. The per capita disposable personal income of the farm population in 1964 was \$1,270, down less than 2 percent from 1963, but otherwise the highest on record. It was only 55 percent of the per capita disposable income of the nonfarm population in 1964, about the same as in 1960; incomes of nonfarm people have also risen.

During the reporting period, a major revision in farm income estimates was completed. These revisions incorporated data not available previously or not useable for other reasons from various sources including the Census of Agriculture, USDA production and disposition reports, and other public and private sources. The bulk of the revisions covered the years 1946-64, but changes were made in some accounts and in the totals back to 1910. The revisions were carried through to the State level for which estimates are available only from 1949. These revisions--National and State--were transmitted to the Department of Commerce for incorporation into the national income and product accounts and regional and state personal income flow accounts.

Also during the reporting period, estimates of farm income in Alaska and Hawaii were developed and published for the first time. These estimates start with 1960. They show that in 1964, Alaska's farmers received \$4.2 million from their farm marketings and receipts in Hawaii were \$173.1 million. The data also revealed that while realized net income per farm in Alaska in 1964 was among the lowest in the Nation at \$824, the opposite was true for Hawaii where the farm average at \$11,456 was third highest among the 50 States.

Work on systems analysis in preparation for transferring a substantial part of the gross farm income estimating work to automatic data processing equipment continued during the reporting period. Definite selection of the type of computer the Department will acquire has now been made. The systems analysis will be completed and programming and testing will be largely completed during the upcoming reporting period.

#### B. Research and Methods relating to farm income.

1. Development of estimates of income of farm operator families by value of sales classes.--Income measures were developed for 1959-64 more accurately to depict changes in the income position of various groups of farms within Agriculture. Distributions of income by economic class of farm for farm operator families--including off-farm income as well as farm income--for the years 1959-63 were published for the first time in the November 1964 issue of the Farm Income Situation. A series including similar estimates for 1964, based on new estimates of the number of farms by economic class, and showing revised data for 1959-63 was developed and published in the July 1965 issue of the Farm Income Situation. This information reveals many aspects of the farm income situation that are not apparent from aggregates and averages for all farms combined. The estimates published in July 1965 show generally that relatively few farms in the higher value of sales classes account for the bulk of cash receipts and realized net income. In 1964, for example, an estimated 1,010,000 farms with sales of \$10,000 or more accounted for \$31.6 billion in cash receipts (including Government payments) out of a total of \$39.1 billion for all farms combined. In relative terms, this group comprising 29.1 percent of all farms accounted for 80.7 percent of cash receipts in 1964. Furthermore, this same group of farms accounted for 64.3 percent of total realized net income in 1964.

The total income position--off-farm income as well as farm income--of farm families in the various sales groups reveal several significant aspects of the income structure within Agriculture. For example, of the average total income in 1964 for farm families in the \$10,000-\$19,999 sales group, by far the largest share came from farm sources--about \$8 out of every \$10 of total income. As the scale of farming operations declines the relative dependence upon off-farm sources of income increases. .



Thus the \$20,000 and over level farm operator families on the average derive less than \$2 of every \$10 of total income from off-farm sources while in the less than \$2,500 sales group, about \$7.50 out of every \$10 of total income came from off-farm sources.

Work has been done and efforts are continuing to obtain information on farms and farm characteristics by economic class of farm from a general purpose ERS Survey. This project involves cooperation among the several Divisions of ERS.

In cooperation with the Bureau of Labor Statistics, questions on income and expenditures of U.S. farmers, by economic class, and type of farm, were included in the 1961 Consumers' Expenditures Survey. During the past year detailed plans were developed for the tabulation of these data.

Data from this survey and from the 1964 Census of Agriculture will provide new benchmarks for use in reexamining and where necessary revising the data on farms and farm characteristics by value of sales groups.

2. Measurement and analysis of relationships between Agriculture and other segments of the economy.--In response to a major new program of the Department of Commerce's Office of Business Economics, the Farm Income Branch has cooperated in the preparation of estimates pertaining to Agriculture for a set of interindustry (input-output) tables as a part of an integrated system of national accounts. In accordance with this new program "The Interindustry Structure of the United States," a report on the 1958 Input-Output Study was published by the O.B.E. in the November 1964 issue of the Survey of Current Business. Basic estimates for the report relating to Agriculture were developed by the staff of the Farm Income Branch. Although this report shows only 2 major agriculture sectors, estimates of input-output transactions were developed for 17 agriculture sectors. The preparation of these accounts involved the processing of thousands of estimates from literally hundreds of different sources.

A transactions table has been prepared combining the transactions of the agriculture sectors at the 17 sector level with the nonagriculture sector transactions as they appeared in the O.B.E. report. In effect this has expanded the table from 82 sectors to 97 sectors. A table of coefficients of direct inputs from this expanded transactions table was computed and an input-output inverse has been obtained by use of an electronic computer. Thus, empirical measures are available for estimating outputs of individual farm and nonfarm sectors directly and indirectly associated with specified deliveries to final consumers. A first report to present this additional information emphasizing Agriculture and its relationship with the rest of the economy is nearly finished.

Information from the 1958 input-output study and other related data are currently being used to develop estimates of the output, employment, and income in the national economy directly and indirectly associated with Agriculture. Such information can provide a basis for determining the impact of alternative program adjustments on the various sectors of the economy for specific agricultural commodities.

Work is now nearly completed at O.B.E. on updating their 1958 data to 1961 for the purpose of developing a complete transactions table for the economy for that year. In this connection we have provided the O.B.E. with output control totals and composite price indexes along with other specified data requested by them. Also work is now just starting on an input-output study for the year 1963.

3. State estimates of total income of farm people.--Preliminary attempts were made to estimate the average income of farm people from all sources at the state level. This was done by utilizing 1959 income data from the 1960 Census of Population. Also plans were made to develop benchmark estimates of off-farm income of farm operator families by states based on information to be obtained from the 1964 Census of Agriculture. Such information will provide data necessary for making state and regional estimates of the economic well being of farm people relative to nonfarm people and for determining the importance of off-farm income relative to farm income in the total income picture of farm families in different parts of the country. A comparison of these income estimates for 1959 and 1964 with the U.S. Department of Commerce's series on total personal income by states could provide a measure of the relationship between changes in the income position of farm people versus nonfarm people below the national level. Such a relationship could be used to develop alternative measures of the year-to-year changes in the personal income of the farm population at the national level.

#### C. Analysis of the impact of alternative farm programs on agriculture and the general economy.

Work on the concept of income parity which states that the return on the capital, labor, and management employed on efficient commercial farms should be comparable to the return on similar factors of production employed in nonfarm enterprises continued. Revised estimates for the period 1961-1964 and preliminary approximations for 1965 have been developed. Alternative measures of the return on capital and the development of a "book-value" measure of the value of farmland were explored.

This work indicates that the million or so farms with value of sales of \$10,000 or more would have required an increase of 11 percent in realized net income to provide a return of 5 percent on the farm operator's capital

and a return equal to average hourly earnings of factory workers for the labor supplied by the farm operator and his family.

Data from the 1961 Consumer Expenditures Survey and the 1964 Census of Agriculture will provide benchmark data for reexamination and possible revision of the estimates of farm capital used in the income parity calculations.

D. Centralization and Maintenance of Economic Data Pertaining to Agriculture.

Preparing replies to several thousand letters to the President and the Secretary was a major activity during the reporting period. The low level of prices received by farmers particularly for meat animals, dissatisfaction with the low level of farm income, and interest in proposals for new farm legislation were the principal factors that seemed to provide the motive for most of these letters.

Several organizations engaged in campaigns to induce their members and friends to write to the Secretary or the President or both. Designing a suitable reply for these letters, organizing methods for their reproduction, and setting up a system for recording both the incoming letters and the replies was a full-time activity involving several man-months of both professional and clerical time.

During the past year increased emphasis on the importance of Agriculture and rural America to the Nation's economic life, and the objective of developing a better public understanding of this position added notably to requests for agricultural information from the general public, officials of the Department, offices of Congressmen and Congressional Committees.

The demand for information on farm prices and income increased. This required the preparation of a series of brief statements describing farm income developments in each of the States as well as a large volume of other brief statements of economic information pertaining to agriculture.

The Statistical Services Section continued to prepare and circulate a looseleaf handbook providing current statistical information to policy makers in the Department and other high-ranking individuals. A somewhat smaller list of persons was serviced on a continuing basis by supplying specified information by telephone, mail or personal contact.

Intensified efforts better to inform consumers as to the relative importance of agriculture and nonagricultural industries led to a large volume of requests for information. Some typical examples of information or activity involving the Section include:



- (1) Participation in revising the Fact Book of U.S. Agriculture; also, Upswing in Rural America.
- (2) Providing data for releases such as Background on U.S. Agriculture.
- (3) Supplying data for major portions of the Congressional Committee print, Food Costs--Farm Prices.

The section continued to assemble and maintain basic economic statistics pertaining to agriculture. Major contributions of statistical data were made to the Economic Report of the President, the Statistical Abstract of the U.S., the World Almanac, the Statesman's Yearbook and Agricultural Statistics. Checking and verifying basic economic data (as per Secretary's Memorandum No. 1476) for public release was done on request.

Revisions by the Department in Farm-Retail Spreads for Food Products and by the Department of Labor in the Consumer Price Index added to the work of the Section.

A seasonal index for adjusting egg prices was provided for publication in the SRS report Agricultural Prices. The parity ratio adjusted to take account of direct payments to farmers was revised and brought to date for publication in the January issue of that same report.



## AREA NO. 3. FARM INCOME

## PUBLICATIONS -- USDA AND COOPERATIVE PROGRAMS

Current Estimates of Farm Income and Expenditures

The Farm Income Situation, published in February, April, July, and November.

Supplement to the Farm Income Situation for July 1965. August 1965.

Research and Methods Relating to Farm Income

Income of Farm Operator Families by Value of Sales Classes, Farm Income Situation, FIS-199, pp. 71-77, and FIS-196, pp. 18-27.

## AREA NO. 4. ECONOMIC OUTLOOK, CONSUMPTION AND LONG-RUN PROJECTIONS

### PROBLEM

This area of research encompasses comprehensive continuing analyses of changes in domestic and foreign economic activity, related agricultural policy, technological developments, food consumption and nutrition, and their impact on the agricultural situation and outlook. These analyses are concerned with the current situation, economic outlook, and longer-run projections and policy analysis. They require the development of statistical data relating to the demand for farm products, domestic consumption trends, foreign trade, the supply-utilization balance for major farm products, farm prices and incomes, and general economic activity. Such data and economic analyses based on them are essential to farmers, legislators, administrators, private businessmen, and others concerned with the development and appraisal of policy and programs and with changes in the production and marketing of farm products.

### USDA AND COOPERATIVE PROGRAM

The Department has a continuing long-term program designed to appraise the economic outlook, consumption of farm products, longer-run prospects for agriculture, and policy appraisal. The staff of the Outlook and Projections Branch participating in this work currently consists of 9 professional man-years. The work is located in Washington, D.C. It includes (a) demand analysis and agricultural outlook, 3 professional man-years; (b) long-run agricultural projections, 3 professional man-years; and (c) supplies and utilization of food and other agricultural products, 3 professional man-years.

### PROGRAM OF STATE EXPERIMENT STATIONS

After World War II the States made several long-run projection studies but the number has declined in recent years. In addition, at least three States are analyzing food expenditure and consumption data obtained through diaries maintained by household panels. The total research effort is approximately six professional man-years.

### PROGRESS -- USDA AND COOPERATIVE PROGRAMS

#### A. Demand analysis and agricultural outlook

Appraisals were made of income tax and excise tax cuts, changes in the Federal Budget, sluggishness in residential housing construction, acceleration in outlays for fixed plant and equipment, expansions in the money supply, gains in foreign demand, improvement in the balance of payments,

advances in technology, drafting of farm legislation, changes in agricultural resource holdings, and other developments in the general and the agricultural economy. Consequences of these developments were analyzed with respect to the demand and supply of farm products, prices received and paid by farmers, farm income, and the general agricultural situation and outlook.

The agricultural situation and outlook for 1965 was reported in the November 1964 Demand and Price Situation and was reappraised in the January, April, and July issues. Other statements of the general agricultural situation and outlook were released through the Farm Index, Agricultural Statistics, the Handbook of Agricultural Charts, radio broadcasts, presentations at regional and National outlook conferences, special articles, bulletins, professional journals, memoranda, and correspondence.

Research work included developments of an analytical framework appraising supply prospects for major commodities in relation to resource inputs and farm programs. This framework was used in appraising prospective changes in domestic use of farm products, farm product prices, changes in carry-over stocks, and farm income prospects. Indices of carryover stocks and price support levels were developed and used in appraising year-to-year fluctuations in prices received by farmers. Statistical analyses were conducted and frameworks developed to explain changes in business conditions, employment, consumer income, and the demand for farm products.

#### B. Long-run agricultural projections

Projections for agriculture and related factors for non-agriculture were made for 1970 and 1980. These projections include estimates of population and income growth for the total economy and production, imports, domestic requirements, exports and prices of the major agricultural commodities. Imbalances in terms of particular crops for each target year were also estimated. A manuscript has been prepared which reports the results of this analysis, largely in graphic form. General conclusions of this, as for similar previous reports, are that U.S. agriculture will continue to be able to provide abundant food and fiber supplies for the growing U.S. population as well as increasing quantities for export. With the continued adoption of improved technology in crop production, supplies will continue to press on demand, resulting in somewhat lower prices for crops. On the other hand, with an increasing demand for meats, especially beef, and no dramatic breakthroughs in livestock production technology, livestock prices are expected to rise slightly over the next 1½ decades.

Two papers dealing with methods for projecting the supply and demand for livestock and feed were presented at professional meetings. Other papers on the theory and methodology of projections have been submitted for publication in professional journals, and a paper on the post-war demand for feed concentrates has been published.



Several other special analyses on various aspects of the long-run outlook for agriculture were prepared for other divisions of ERS, the Farm Credit Administration, the Administrator, the Director of Agricultural Economics, Congressmen, and others.

### C. Supplies and utilization of food and other agricultural products

The long-term program of measurement and appraisal of the supply and consumption of foods was continued. Per capita food consumption indexes were published for the major food products and for total food. These indexes were computed on an annual basis but recomputed quarterly and published in the National Food Situation. Food consumption trends and patterns, retail food price movements, changes in food expenditures, foreign trade in food products, and short-run outlook were evaluated and published quarterly.

Supply and utilization tables were prepared for the major food products. These tables provide the primary basis for calculation of per capita food consumption and the index of supply and utilization of all farm commodities. These tables were published in U.S. Food Consumption, carrying data through 1963. The index of supply and utilization of farm commodities was calculated in detail but only the summary tables were published. These data were published in the National Food Situation and Agricultural Statistics. Totals for crops and for livestock were published for the first time. A review of the basic methodology that underlies this set of index numbers was begun.

The annual outlook for food was presented at the National Agricultural Outlook Conference, Washington, D.C., in November 1964.

A statistical bulletin giving historical estimates of per capita food consumption, U.S. Food Consumption, Sources of Data and Trends, 1909-63, Statistical Bulletin 364, was published in June 1965. This report replaced Consumption of Food in the United States, 1909-52 and its annual supplements. U.S. Food Consumption incorporated data from Alaska and Hawaii beginning with 1960. The per capita food consumption index was re-based to 1957-59. The tables in the report were completely revised, reorganized, and updated. The report includes a full description of the sources of data and methodology used in preparing the supply and utilization tables for individual foods and the per capita food consumption index. Supplements to this report will be published giving data for 1964 and subsequent years.

Increasing attention was given to quarterly and regional estimates of per capita food consumption. Quarterly food consumption estimates for selected food products were published in U.S. Food Consumption. The Food Consumption Section represented ERS on a committee of Southern experiment station workers concerned with the demand for food in the South. This committee proposed the establishment of a regional committee to study demand for food.



Analyses of prices, supplies, and demands for sugar and other sweeteners were begun this year. Similar work relating to coffee, tea, and cocoa and other tropical products was continued and reported in the National Food Situation.

Tables and charts concerned with food consumption, prices, and expenditures were prepared for the annual Handbook of Agricultural Charts. Tables were prepared for Agricultural Statistics. Contributions also were made to the World Agricultural Situation, the Western Hemisphere Agricultural Situation, Family Economics Review, the Farm Index, and Service. Food consumption balance sheets were prepared for the World Food Budget and were sent to FAO and OECD.

## AREA NO. 4--ECONOMIC OUTLOOK, CONSUMPTION AND LONG-RUN PROJECTIONS

## PUBLICATIONS -- USDA AND COOPERATIVE PROGRAMS

Demand Analysis and Agricultural Outlook

Daly, Rex F. 1965. National Economic Outlook Through 1966. Western Livestock Outlook Conference, Brighton, Utah. July.

Demand and Price Situation, published quarterly.

Edwards, Clark. 1964. A Simple Growth Model. Azograph, 9 pp.

Edwards, Clark. 1964. Demand for Grains and Meat, with reference to future production patterns in the Plains. Proceedings of the Great Plains Agricultural Council. Santa Fe, New Mexico. July.

Edwards, Clark. 1964. Income and Output Relationships in 1964-65. Azograph, 5 pp.

Edwards, Clark. 1965. But What About the Side Effects...? Azograph, 26 pp.

Edwards, Clark. 1965. Using Budgeting and Programming in Land Economics Research. Azograph, 34 pp.

Long-Run Agricultural Projections

Daly, Rex F. 1965. Livestock-Feed Sector. Western Livestock Outlook Conference, Brighton, Utah. July.

Egbert, A.C. and Reutlinger, S. 1964. An Integrated Framework for the Livestock-Feed Economy. Proceedings, Association of Southern Agricultural Workers, Inc., Dallas, Texas, February.

Ahalt, J.D. and Egbert, A.C. 1964. The Demand for Feed Concentrates: A Statistical Analysis. Ag. Econ. Res., Vol. XVII, No. 2.

Supplies and Utilization of Food and Other Agricultural Products

National Food Situation, published quarterly.

U.S. Food Consumption, Sources of Data and Trends, 1909-63. 1965. Statistical Bulletin No. 364, 194 pp.

Hiemstra, Stephen J. and Eklund, Helen. 1964. Per Capita Food Consumption Index Revision. Nat. Food Sit., NFS-110, November. pp. 22-27.

Friend, Berta and Phipard, Esther F. 1964. Nutritional Review, National Food Situation, NFS-110, Nov. pp. 28-30.

World Food Situation. 1965. National Food Situation, NFS-111, Feb. pp. 15-21.

Hiemstra, Stephen J. 1965. The Importance of Imports as a Source of Food. National Food Situation, NFS-112, May. pp. 15-18.

Hiemstra, Stephen J. 1965. Consumption and Prices of Cereal and Bakery Products. National Food Situation, NFS-112, May. pp. 19-25.

Hiemstra, Stephen J. 1965. Number and Sales of Food and Beverage Retailers. National Food Situation, NFS-112, May. pp. 26-28.

## AREA NO. 5. AGRICULTURAL HISTORY

## PROBLEM

Historical research on major developments in farming and major changes in policies, programs, and organization of the Department of Agriculture provides a background for understanding current agricultural problems, for developing governmental programs aimed at solving these problems, and for developing a wider understanding of the past achievements of agriculture and the Department. Historical studies have provided some of the basic information needed by the Secretary of Agriculture, advisory committees appointed by the Secretary of Agriculture, Executive Offices of the President, presidential commissions, and the Congress in formulating and evaluating agricultural programs and policies. The accuracy of the studies and the promptness with which needs have been met have contributed to the effective functioning of the Office of the Secretary and other policy-making offices and agencies.

## USDA AND COOPERATIVE PROGRAM

The Department has a continuing long-term program of historical research carried out by historians working in close cooperation with economists, statisticians, physical scientists, political scientists, sociologists, and others. The program involves both basic research and the application of the results of basic research to current problems.

The effort devoted to the project totals 5.5 professional man-years, including:

- (a) work on the development of agriculture in the United States, which currently involves 1.8 professional man-years; and
- (b) work on the history of USDA programs and organization, which currently involves 3.7 professional man-years.

## PROGRAM OF STATE EXPERIMENT STATIONS

No work in agricultural history was reported by the State Experiment Stations.



## PROGRESS--USDA AND COOPERATIVE PROGRAMS

A. Development of agriculture in the United States

As the only office in the Federal Government conducting historical research on the development of American agriculture, the staff carries out numerous analyses of particular problems for the Administrator, the Office of the Secretary, other Government agencies, and research workers in the land-grant colleges and elsewhere. In some cases the analyses are published, but many are not.

The idea of two technological revolutions in agriculture related to the Civil War and World War II has won considerable acceptance. A limited amount of research is being devoted to the problem of quantitative measurements of such revolutions. During the past year, a paper on this subject, as related to the Civil War, was prepared for publication in Agricultural History.

Some work is being undertaken in the preparation of a comprehensive analytic index or guide to source material on American agricultural history. Current work is concentrated on sources for the history of agricultural technology with emphasis on farm mechanization, a subject upon which many inquiries are received every year, and a preliminary index has been prepared. Some of this work is being done under a cooperative agreement with the University of California.

Basic research on the history of farm organizations continued during the year. Information on this topic was supplied to the Office of the Secretary and to scholars in land-grant institutions.

B. History of USDA programs and organization

Work on historical studies of agricultural policies and programs was emphasized during the past year and will continue to receive emphasis. A number of staff studies were prepared upon assignment from the Office of the Administrator and the Office of the Secretary. These were on such topics as the historical background of agricultural programs to alleviate rural poverty, the historical development of 4-H clubs, and an inventory of U. S. overseas food and technical assistance programs. Considerable time was devoted to service work in answering requests for historical information from Department and other Government officials, farm organizations, land-grant institutions and the public.

The celebration of International Cooperation Year led to many requests for material on the historical background of technical assistance programs in food and agriculture.

Research completed on the history of price support and adjustment programs was important in preparing several of the staff studies needed by the Office of the Secretary. Arrangements have been made to undertake a comprehensive history of production adjustment, price support and surplus disposal programs with initial studies of selected commodities.

At the request of and in cooperation with the foreign analysis divisions of the Economic Research Service and the Foreign Agricultural Service, work is under way on a comprehensive history of U. S. technical assistance programs in agriculture. Drafts of five chapters have been completed and circulated for comments. This study will continue as a major project during the coming year.

At the request of the Department's Office of Personnel, a history of personnel management in the Department has been undertaken. The project is significant outside the Department in that USDA personnel programs have influenced many other government agencies. Drafts of four chapters have been completed and circulated for comments.

## AREA NO. 5. AGRICULTURAL HISTORY

## PUBLICATIONS---USDA AND COOPERATIVE PROGRAMS

Rasmussen, Wayne D. 1965. The Civil War: A Catalyst of Agricultural Revolution. Agricultural History. Vol. 39, pp. 185-194.

Economic Research Service. 1965. A Chronology of American Agriculture, 1790-1965. A fold-out chart.

## Line Project Check List -- Reporting Year October 1, 1964 to September 30, 1965

Work & Line Project Number	Work and Line Project Titles	Work Locations During Past Year	Line Project Incl. in	
			Summary of Progress (Yes-No)	Area and Subheading
ESA 1	Current Outlook and Situation Analysis for Agricultural Commodities	Washington, D.C.		
ESA 1-1	Livestock and meat	Washington, D.C. & Denver, Colo.	Yes	1-A
ESA 1-2	Fats, oils and oilseeds	Washington, D.C.	Yes	1-B
ESA 1-3	Milk and manufactured dairy products	Washington, D.C.	Yes	1-C
ESA 1-4	Poultry and eggs	Washington, D.C.	Yes	1-D
ESA 1-5	Food Grains	Washington, D.C.	Yes	1-E
ESA 1-6	Feed grains and other feeds	Washington, D.C.	Yes	1-F
ESA 1-7	Fruits and tree nuts	Washington, D.C.	Yes	1-G
ESA 1-8	Vegetables	Washington, D.C.	Yes	1-H
ESA 1-9	Sugar and allied sweeteners*	Washington, D.C.	No	
ESA 1-10	Cotton and synthetic fibers	Washington, D.C.	Yes	1-I
ESA 1-11	Animal fibers	Washington, D.C.	Yes	1-J
ESA 1-12	Tobacco and tobacco products	Washington, D.C.	Yes	1-K
ESA 2	Price, Supply, and Utilization Analysis for Farm Products	Washington, D.C.		
ESA 2-1	Development, consultation and service work	Washington, D.C.	Yes	2-D, H
ESA 2-3	Effects of technological changes on tobacco	Washington, D.C.	Yes	2-G
ESA 2-5	Price, demand and utilization of fruits**	Washington, D.C.	No	
ESA 2-6	Consumption of textile fibers	Washington, D.C.	Yes	2-F
ESA 2-7	Price and utilization of cotton	Washington, D.C.	Yes	2-F
ESA 2-8	Price and supply of beef cattle	Washington, D.C.	Yes	2-A
ESA 2-9	Price and consumption of meat	Washington, D.C.	Yes	2-A
ESA 2-10	Price, supply and utilization of vegetables	Washington, D.C.	Yes	2-E
ESA 2-11	Price, supply and consumption of poultry	Washington, D.C.	Yes	2-C
ESA 2-12	Factors that affect the feed-livestock economy	Washington, D.C.	Yes	2-A, B
ESA 2-13	Supply, price and utilization of tobacco	Washington, D.C.	Yes	2-G

\* No work done during reporting period. Project discontinued September 1965.

\*\* Discontinued July 1965.



## Line Project Check List -- Reporting Period October 1, 1964 to September 30, 1965 (Cont'd)

Work & Line Project Number	Work and Line Project Titles	Work Locations During Past Year	Line Project Incl. in	
			Summary of Progress (Yes-No)	Area and Subheading
ESA 3	Measurement and analysis of farm income and expenditures	Washington, D.C.		
ESA 3-1	Current estimates of cash receipts, gross and net farm income, and related series	Washington, D.C.	Yes	3-A
ESA 4	Research and methods relating to farm income estimates	Washington, D.C.		
ESA 4-1	Income estimates analysis and development	Washington, D.C.	Yes	3-B-1,2,3
ESA 4-2	Quantitative relationships between agriculture and other sectors of the economy	Washington, D.C.	Yes	3-C
ESA 5	Statistical data services	Washington, D.C.		
ESA 5-1	Statistical services which includes the centralization, maintenance, and analysis of basic economic data relating to agriculture	Washington, D.C.	Yes	3-D
ESA 6	Income and demand analysis as applied to agriculture and the agricultural outlook	Washington, D.C.		
ESA 6-1	Agricultural situation and outlook analysis, including domestic and foreign demand, short-term and long-term improvements in data and techniques	Washington, D.C.	Yes	4-A
ESA 7	Long-run agricultural projections, analysis and research	Washington, D.C.		
ESA 7-1	Integrated long-run projections of supplies, utilization, prices and income for agriculture	Washington, D.C.	Yes	4-B
ESA 7-2	Analysis of the long-run implications of alternative farm programs	Washington, D.C.	Yes	4-B
ESA 7-3	Estimation and development of a long-run aggregate supply and demand structure for livestock, livestock products, feeds and other field crops	Washington, D.C.	Yes	4-B
ESA 8	Measurement and analysis of supplies and consumption of food and other agricultural products	Washington, D.C.		
ESA 8-1	Estimation and outlook analysis of food supplies, consumption, and prices	Washington, D.C.	Yes	4-C
ESA 8-2	Re-evaluation and improvement of indexes of supply-utilization of farm commodities	Washington, D.C.	Yes	4-C
ESA 8-3	Analysis of changes in the demand for food	Washington, D.C.	Yes	4-C
ESA 9	Agricultural history	Washington, D.C.		
ESA 9-1	Service work on the history of agriculture	Washington, D.C.	Yes	5-A
ESA 9-2	Documentation of Department policies, organization, and administration	Washington, D.C.	Yes	5-B
ESA 9-3	History of production adjustment plans and programs	Washington, D.C.	Yes	5-B

